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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/646,438

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Shunichi Sato

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9492

7590

12/09/2004

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EXAMINER

LOUIE, WAI SING

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 12/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/646,438	Applicant(s) SATO ET AL.	
	Examiner Wai-Sing Louie	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 70-72 and 75-122 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 70-72 and 75-122 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/25/03</u> . | 6) <input type="checkbox"/> Other: ____  |

## DETAILED ACTION

### *Double Patenting*

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 70-72 and 75-122 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-41 of U.S. Patent No. 6,207,972. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

With regard to claims 70-72, US 6,207,973 discloses a semiconductor light emitting device comprising:

- a semiconductor substrate (claim 1),
- an active region comprising a strained quantum well layer (claim 1), and
- a cladding layer for confining carriers and light emissions (claim 1),
- wherein an amount of lattice strains in said quantum well layer is in excess of 2% against either said semiconductor substrate or said cladding layer (claim 1).

With regard to claims 75, 91, and 107, US 6,207,973 discloses a thickness of the quantum well layer is in excess of a critical thickness calculated by a relationship of Matthews and Blakeslee (claim 2).

With regard to claims 76, 92, and 108, US 6,207,973 discloses the semiconductor substrate is composed of GaAs (claim 3).

With regard to claims 77, 93, and 109, US 6,207,973 discloses the strained quantum well layer is composed of  $\text{Ga}_x\text{In}_{1-x}\text{N}_y\text{As}_{1-y}$ , where  $0 \leq x \leq 1, 0 \leq y < 1$  (claim 4).

With regard to claims 78, 94, and 110, US 6,207,973 discloses the strained quantum well layer composed of  $\text{Ga}_x\text{In}_{1-x}\text{N}_y\text{As}_{1-y}$  ( $0 \leq x \leq 1, 0 \leq y < 1$ ) is characterized to have a photoluminescence peak wavelength of at least 1.12 micron for GaInAs, where  $y=0$  (claim 5).

With regard to claims 79, 95, and 111, US 6,207,973 discloses the In content in the strained quantum well layer is at least 30% of In included (claim 6).

With regard to claims 80, 96, and 112, US 6,207,973 discloses the N content in the strained quantum well layer is from 0% to 1% of group-V elements included (claim 7).

With regard to claims 81, 97, and 113, US 6,207,973 discloses a plane orientation of the GaAs substrate is in a (100) direction with an allowable deviation of at most  $5^\circ$  (claim 8).

With regard to claims 82, 98, and 114, US 6,207,973 discloses the cladding layer is composed of either GaInP or GaInPAs (claim 9).

With regard to claims 83, 99, and 115, US 6,207,973 discloses a barrier layer provided in a vicinity of said strained quantum well layer to relax the strains (claim 10).

With regard to claims 84, 100, and 116, US 6,207,973 discloses the semiconductor light-emitting device is a surface emitting type device (claim 11).

With regard to claims 85, 101, and 117, US 6,207,973 discloses:

- a first mirror region formed adjacent to the semiconductor substrate, a quantum well active region formed, comprising the strained quantum well layer (claim 12); and
- a second mirror region formed on an opposite side of the active region from the first mirror region, to collectively constitute an optical cavity for achieving stimulated light emissions (claim 12),
- where at least said first mirror region is constructed to have a periodic multi-layered structure of thin semiconductor layers with alternating higher and lower refractive indices (claim 12).

With regard to claims 86, 102, and 118, in addition to the limitations disclosed in claim 12, US 6,207,973 also discloses:

- wherein at least the first mirror region is constructed to have a periodic multi-layered structure of thin semiconductor layers with alternating higher and lower refractive indices, in which the thin semiconductor layers are characterized as to contain no Al (claim 13).

With regard to claims 87, 103, and 119, in addition to the limitations disclosed in claim 12, US 6,207,973 also discloses:

- wherein at least said first mirror region is constructed to have a periodic multi-layered structure of thin dielectric layers with alternating higher and lower refractive indices (claim 14).

With regard to claims 88, 104, and 120, US 6,207,973 discloses the strained quantum well layer is formed at temperatures of at most 600°C (claim 15).

With regard to claims 89, 105, and 121, US 6,207,973 discloses light emitting device comprises III-V alloy semiconductor layers formed by metal organic chemical vapor deposition (MOCVD) using organic compounds as the source material for the III-group elements (claim 16).

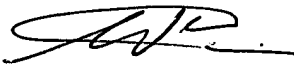
With regard to claims 90, 106, and 122, US 6,207,973 discloses the strained quantum well layer is formed using nitrogen containing organic compounds selected from the group consisting of dimethylhydrazine and monomethylhydrazine (claim 17).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (571) 272-1709. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (571) 272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2814

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wsl   
December 7, 2004.